Frozen remains of representatives of the mammoth fauna are sources of diverse information on Pleistocene ecosystems [1]. The finding of a mummified baby mammoth (*Mammuthus primigenius* Blumenbach, 1799) on the Yuribey River on the Yamal Peninsula (68°38' N, 71°40' E) (Fig. 1) was one of such sources. This is the best preserved mummified mammoth thus far, bearing only slight skin lesions. This is the carcass of a female mammoth no older than two or three months. It received a personal name, Lyuba. Examination showed that the baby mammoth had no internal lesions and had a well-developed subcutaneous fat. As part of the study, a sample of the large intestine contents was taken and comprehensively analyzed. The intestine was filled with a mixture of detritus and mineral precipitate. The results of its analysis allowed us to reconstruct the natural conditions existing during the lifespan of the baby mammoth and determine the cause of its death.

Analysis of bone tissue yielded a C14 date of 41 910 (+550, –450) yr BP (GrA, 41 246). Analysis of the intestine detritus sample yielded a C14 date of 41 700 (+700, –550) yr BP (GrA, 41 861). These dates practically coincide, indicating synchronism of the time of the mammoth’s death and the formation of its intestine contents. The date corresponds to the middle of a relatively warm marine isotope stage 3 (MIS-3, the time of the Kargian and Leningrad interstadials or the Weichselian Pleniglacial) [2].

**Biomorphic and phytolith analyses.** The detritus sample mostly consists of plant remains. The most prevalent were those of various true mosses, including *Aulacomnium turgidum* (Wahlenb.) Schwaegr. and *Drepanocladus* sp. Remains of *Eriophorum* sp. and *Selaginella cf. rupestris* are also present. There are relatively many remains of conductive tissues of roots and epidermis of monocotyledonous (grasses, including bluegrasses and sedges) and dicotyledonous herbs. No remains of woody plants or lignified tissues have been found. Phytoliths (51 specimens) belong to herbaceous plants (forbs, bluegrasses, and, more rarely, meadow grasses and sedges), including markedly serrate forms developing under dry conditions. The degree of phytolith formation in grasses indicates a late summer to early autumn period. The sample also contains spicules of sponges and valves of diatoms without signs of transfer or redeposition. We have also found remains of worms (six specimens), two of which belong to nematodes. The whole spicules of sponges and valves of diatoms in the intestine contents indicate that the mammoth swallowed bottom sediments (silt) from a stagnant water body or a slow stream at the initial stage of paludification. The vegetation in the vicinity of the water body was dominated by forbs and grasses, with an admixture of sedges.

**Palynological analysis.** The spore–pollen spectrum is mainly accounted for by tree and shrub pollen (61.3%) dominated by pollen of pines (*Pinus Diploxylon* type and *P. Haploxylon* type accounting for 39.3% of pollen). There is also much spruce (*Picea* sp.) and birch (*Betula pubescens* type) pollen (10.2 and 9.7%, respectively); the proportion of the pollen of shrubby birches (*B. nana* type) is only 1.3% of the pollen of all identified forms. The pollen of fir (*Abies sibirica* type) and alder (*Alnus glutinosa* type) is represented by a few grains. Most of the pollen of woody plants was transported from afar; however, the large amount of spruce...
Sphagnum are found in dry habitats. Sordaria Aulacomnium turgidum Palustria (b) Lake Yaroto 1st misia paludification of the water body. The spores of coproalgae palynomorphs (algae, as well as fungal spores and palynological spectrum includes remains of other than 1% of the total amount of pollen and spores. The type) and ferns (Polypodiales) account for 4.2% of the 8.7%). There are small amounts of the pollen of grasses (Poaceae, 11.8%) and sedges (Cyperaceae, dwarf shrub pollen is 34.5% of the total amount of pol-

The resulting spore–pollen spectrum reflects the floristic composition of the plant communities that produced it. The low proportion of redeposited forms indicates that the sample studied was of autochtho-

Analysis of organic macro-remains. The detritus is mostly branches of mosses, among which the following species have been identified (the identification was performed by Dr. I.L. Gol’dberg): Polytrichum sp., Abietinella abietina (Hedw.) C. Muell., Tomentypnum nitens (Hedw.) Loeske, Calliergon richardsonii (Mitt.) Kindb., Hlyocodium splendens (Hedw.) B. S. G., Aulacomnium turgidum (Wahlenb.) Schwaeeg., Drepano-

Fig. 1. (a) The location of the finding of the mummified baby mammoth Lyuba; (b) the same with a greater magnification. The asterisk indicates the site of the finding.

dominantly found on feces of herbivorous animals [4]. The baby mammoth may have swallowed them when eating its mother’s feces like modern baby ele-

face to the water body, and spores settled at the bot-

nous origin. Sedge–grass communities with a small contribution of forbs formed the basis of the vegetation. Tundra shrub communities also occurred. Woody vegetation (probably, spruce formations) could exist in the valley of the Yuribey River or a little south of it.
The remains of seeds have a well-preserved, sculptured surface. They belong to herbaceous species and genera that are common for both the tundra and boreal zones. These are *Festuca* sp. (three spikes), *Carex* sp. (one nutlet), *Ranunculus* cf. *flammula* (one nutlet and two fragments), and *Ranunculus* cf. *acer* (one nutlet). *R. flammula* L. is absent in the modern flora of Yamal; it occurs in moist meadows and sedge marshes of the forest zone [5]. The remains of seeds are at the ripe stage, which indicates the end of the vegetation period.

A few remains of insect chitin with a preserved sculptured surface and epiphia of *Daphna* sp. (28 specimens) have been found.

The analyzed remains allow us to reconstruct a mildly paludified water body. The good state of preservation of seeds and chitin indicates the absence of redeposition.

Thus, the sample of the contents of the small intestine of the mummified baby mammoth consists of slightly decomposed plant detritus and mineral precipitate that have never been redeposited. These are bottom sediments of a stagnant or slowly running water body at the initial stage of paludification. Grass–sedge communities with admixtures of forbs and *Betula nana*. Woody vegetation was absent in the close vicinity, but spruce formation existed to the south of this site. Our data demonstrate that the baby mammoth lived in tundra-like landscapes. The bottom sediments in its intestine indicate that it drowned in a water body.

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